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THE PUBLIC SCHOOL AND THE DAY'S WORK

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At the University of Cincinnati, the engineering courses are planned on what is known as the co-operative system. In this system theory and practice are taught simultaneously, the theory being obtained at the university and the practice in the commercial factories of the city. The students are divided into two sections, which alternate with each other weekly, between school and shop. My duties, in connection with these courses, therefore, require me to spend as much time in the commercial shops as in the university.

Several years ago, incidents growing out of this shop work, led me to make a little investigation to find what had been the training of the men who built up and who now direct the industries with which we co-operate. The results were so contrary to what I had expected that I thought, perhaps, they were peculiar to my own city. So I investigated further, but found only confirmation. Briefly, the results might be summarized as follows: If to build up and operate a business constitutes success, then the way to become successful is to begin work when you are between twelve and fourteen years old.

Not long ago I was one of three college professors invited to address an organization, whose object was the welfare of children. Prior to our appearance on the platform to denounce child labor, we had an exchange of experiences, which developed the fact that all three of us were at work when we were twelve years old, so that each was speaker and horrible example in one. This led to a further investigation among professional men, and here, too, I found that the more robust had done organized manual work before they were fourteen years old. In general, it was evident also that, except in the professions, the college men and high school graduates did not hold the major positions, nor did they seem immediately in line for them.

The results, since they did not fit popular theories, required

analysis, and the analysis developed naturally into a study of this thing we call work.

The Fruits of Labor

Now, the reason we work is because we have to. There is an instinct for work, but basically it is the instinct for self-preservation and self-perpetuation. We must work to live. If all the world had a climate like that of the South Sea Islands, it is safe to say none of us would work. Had Nature provided initially for all of man's needs, it is probable that we should be without complex problems, without wars, without government, without most of what we call civilization, without work. The struggle for existence has brought us to our present stage of development. All that is best in the history of civilization has come from work, and all that is worst, from idleness and the consequent sins of idleness. Mentality is the result of motor activity, and in turn stimulates it. Thinking and working are reciprocal aids. Integrity, honesty, discipline, sound health, fair dealing, respect for each other's rights—these have come through the assumption of one's burden of work, and the opposites of these are the result of the desire to dodge the burden.

The determination to enjoy more completely the fruits of one's own work has been basilar in all the significant upward pushes of mankind. This is the warp upon which are woven the great human documents, such as Magna Charta and the Declaration of Independence.

Work Without Light, Physical or Mental

But there has been a change in the conditions of work. Scientific achievement and mechanical ingenuity have set up barriers to the realization of all its benefits.

In the first place, it is only within the past two generations that mankind has worked in masses within walls.

It does not seem reasonable to suppose that, after centuries of self-directed work largely in the open, humanity will at once adjust itself to continuous high pressure effort indoors. We have attempted a revolution in the face of the well-known fact that Nature works by evolutionary methods. In the second place, the industrial worker formerly knew a *whole* job rather than a part of it; he

performed a great variety of functions in the completion of his task instead of endlessly repeating the same operation. The clockmaker made a *whole* clock, and the necessity of working out every part's relation to every other part gave the worker a mental stimulus. Under our present highly organized industrial conditions, a worker feeds material into a machine, or he makes piece after piece of the same kind, cuts shape after shape, winds coil after coil, and why he does it he need not know and is not told. It is unquestionable that much of the present spirit of unrest is Nature's protest against work without light, physical and mental.

So in considering the early training of the men who built and who manage our industries, it is obvious that we must consider these changes in the conditions of work, and further that we must define sharply between the energizing work of former days and the enervating work so prevalent to-day.

Energizing vs. Enervating Work

Nature's fundamental law of work must be divided into two laws: namely, The Law of Energizing Work, which makes for progress, and The Law of Enervating Work, which makes for retrogression. These two types can be distinguished by the effects they have upon the worker's intelligence, and the corresponding reaction which the mental stimulus, or lack of mental stimulus, has upon his work. Nearly all the work still done in the open air, where there is a dependent sequence of operation, which involves planning on the part of the worker, is energizing work. Specific examples may be cited in farm work, railroad work and the building trades. Probably the finest example is that of the locomotive engineer. The lethargizing work has come principally through commercializing household duties, such as making clothes and doing laundry work, and sub-dividing work so that each worker does one thing over and over in the smallest number of cubic feet of space. We are putting the brains into machine and into management office, with the result that the worker himself is becoming purely automatic.

Herein lies the difference between energizing work, which developed through the work itself the leaders in industry and in commerce, and enervating work which threatens to destroy the mentality of the worker. It is this purely automatic, high-pressure work in closely crowded rooms, which is the most ominous feature of mod-

ern industrialism, its most serious aspect being the effect upon mental development. Scientific research has shown us that the monotonous rhythmic repetitions of the machine's motion and the monotonous rhythmic motion of feeding the machine, produce an hypnotic, deadening influence on the mind. The lower brain centers, controlling habits, are developed at the expense of the higher centers, the active thinking centers. As the habit becomes ingrained, the worker becomes lethargic and automatic, and almost as incapable of independent, intelligent action as the machine itself. Research further shows that the higher centers in the brain of such a worker are in danger of getting into a permanent, inelastic, hopeless set, if a lively stimulus is not supplied.

Further, there is in every individual a desire for self-expression, and if this cannot be had in one's work, nature will force another outlet for it. It cannot be dammed up even for a short period of time; and since there is no outlet in the worker's daily task, it must come during his idle hours, and sometimes takes a form which leads to many of our most vexing sociological problems.

The situation, then, sifts down to this: Energizing work is decreasing; Enervating work is increasing. In spite of the warnings of history we are rapidly dividing mankind into a staff of mental workers and an army of purely physical workers. The physical workers are becoming more and more automatic with the sure result that their minds are becoming more and more lethargic. The work itself is not character building; on the contrary, it is repressive, and when self-expression comes, it is hardly energizing mentally. The real menace lies in the fact that in a self-governing industrial community the minds of the majority are in danger of becoming atrophied, or at best of becoming trifling or superficial because of lack of continuous normal exercise in conjunction with the earning of a livelihood. The kind of citizenship a republic needs cannot be built on sixty hours per week of automatic work. We cannot reverse our present economic order of things. Automatic work is increasing and will continue to increase for a long time to come. The condition is here and philosophical discussion will not remove it.

To put a child of twelve or fourteen years of age at energizing work, properly safeguarded, is not a cause for worry. Various means have been devised to continue his education and the work

itself will give him the necessary stimulus. But there is not nearly enough of this type of work to go around. The majority of children must go into automatic occupations; hence, to keep them away from work until they are fourteen or sixteen years old does not solve the problem, if at that time they go into mentally enervating work, as most of them do. The problem of child-protection becomes one of protecting his mind; and as far as we can ascertain, this can be accomplished only by supplying such mental counteractants as will overcome the lethargizing tendency of the work. We must take stimulating instruction to the young worker *after* he has found his work—in other words, the school must follow him to the shop. Obviously, too, a shift from one type of work to another at proper intervals is necessary.

Supervisory Function of the School

In all occupations, whether energizing or enervating, manual dexterity comes naturally in the course of the day's work, and the school need not worry about it. The function of the school, co-operating with the commercial shop, is, then, two-fold;—first, to exercise a supervision over the shop work for a period of time, so that the shop training shall cover as wide a variety of functions as the occupation permits; second, to give mental training, so that the worker may be an efficient industrial and civic unit. This right of the public school to supervise the thoroughness of work cannot be logically disputed, for the public school system is the only public organization which has, as its special function, the production of good citizenship; the shop authorities are necessarily concerned with the production of material things to such an extent that the child within their jurisdiction is often lost sight of. In the co-operative courses now in operation, this right to plan the shop work for a period of years has been granted the schools by the employers, and has proven commercially profitable to them.

To meet their second function, the public schools must analyze the character of the work, whether energizing or enervating, and plan accordingly. As indicated above, the enervating work presents the more serious and numerically the greater problem. It is also the more difficult educationally. Scientific investigation has furnished the suggestion to the solution. It has been found that a series of stimulating shocks to the higher thinking centers is the

only means of overcoming the lethargizing influence of automatic work. The more automatic and long continued the work, the more spectacular and bizarre must be the stimulating shocks.

Plans of Instruction

Further, the impulses given must be of such character that they will be echoed and re-echoed in the worker's daily tasks. Suppose, for example, a plan of instruction were devised for purely automatic workers in a silk mill. It would first be necessary to ascertain to what countries the products of the mill were sent, and why different types of silks were sent to different countries. Suppose the products went to Brazil, Mexico, different parts of the United States and Canada. Moving pictures, showing the life and customs of these various countries would be obtained and their historical development explained to show why different silks were sent to different communities. Under these conditions, history and geography would have life and the lessons would be good civic training. The very interesting story of the silkworm would be shown also by moving picture films, as would the story of the production of cotton. There are no more striking chemical experiments than the making of dyes, and these would be utilized to stimulate interest. Many other forms of instruction would be given in a similar way and, as far as possible, all would be planned with a view to giving a distinct mental stimulus through spectacular means. It will be evident that the stimulus received in the class room would be echoed and re-echoed in the worker's daily tasks when silks of various kinds and colors come through the machine, so that the net result would be a resurrection of interest and, therefore, of life in the thinking centers.

Part of the Day's Work

This would not be night instruction. On the contrary, it would be given during the day, and the worker paid for the time in the class room just as though he were at his machine. In selecting the time at which this could best be given, investigation of the fatigue element would be necessary. For example, it has been found by actual experiment in certain trades that if high-speed automatic workers are given a complete physical rest for fifteen minutes at

ten o'clock in the morning and at three o'clock in the afternoon, their production is just as great as if they had worked these thirty minutes, and they do not leave their work physically worn out at quitting time. The instruction in this case would be given during the rest period. Immediate financial benefits might not accrue to the employer, but after a short time, he would find that he had a thinking body of employees rather than one becoming atrophied mentally.

Consider by way of contrast another type of continuation school for young men whose work is largely energizing, the machine shop apprentice. While some of the spectacular means mentioned in the previous scheme might be used, the major portion of time would be devoted to teaching the science underlying the work. A school of this type has been in operation for some time in Cincinnati as part of the public school system. The apprentices attend school one-half day per week in rotating sections. Those in the lowest educational grade come on Monday afternoon; the next grade comes Tuesday morning; the next, Tuesday afternoon and so on. On Monday morning and Saturday morning the teachers are at the commercial shops, looking into the shop work of the apprentice. The young men are paid for the one-half day in school just as though they were on their machines in the shop. Carefully scrutinized records of the shop work of these apprentices show that there is no commercial loss to the employers.

These two plans are cited not so much to present definite schemes of instruction as to indicate the trend which public school activities must take to meet the evils incident to modern industrialism. Nor must it be assumed for a moment that the public school's educational functions can counteract the effects on growing children of long hours, depleting environment and deadly monotony; and that, therefore, these evils may continue. Where mental and physical vitality are exhausted, educational attempts will be an added burden rather than a relief. It will be evident that the child labor problem, the industrial education problem and the problem of training for good citizenship are one and the same problem. It will be well to remember, too, that we cannot blanket rigid standards on so variable a thing as humanity and its occupations.